



Integrated Resource Plan City Of Burlington Colorado

*"Building a Strong
Community for
Tomorrow"*

I. Introduction

This Integrated Resource Plan (IRP) has been developed for two reasons. The first is to comply with the Western Area Power Administration's (Western) requirement to submit an IRP. This requirement was the result of Western's "Energy Planning and Management Program" to implement section 114 of the Energy Policy Act of 1992 (EP Act). The second reason for this IRP is to provide the City Council, citizens, and other interested parties with a document, which provides an understanding of Burlington's electric business and the City's plans for continuing to operate this business.

Western's requirement is to update this IRP every five years; however, Burlington may decide to update this plan more often. Any individual reviewing this document needs to be sure that it is the most current version. It should be noted that the City may modify, without notice, any of its plans presented in this IRP in order to continue to provide reliable, cost effective electric service to the citizens of Burlington and will provide such updates to WAPA as soon as practicable.

The City of Burlington, located in eastern Colorado, is a Colorado municipality, which was incorporated in 1888. The current population of the City is approximately 3,600. A Home Rule Charter governs the City. The Mayor and City Council are elected officials, while the City Administrator, City Clerk, City Treasurer, City Attorney, Municipal Judge and Chief of Police are appointed positions. The City provides utility services for water, sewage, and electric while trash is managed via a local contractor. Local gas service is provided by Aquila, and BaJa Broadband provides local Cable TV service.

The City operates an Electric Department to construct, operate and maintain electric service to its citizens. The Electric Department operates using an enterprise fund as established by Colorado State Statutes. The Electric Department provides service to 2,240 customers, which are broken into the following customer rate classes:

Residential	1,856
Commercial	302
Large Commercial	82

In 2006, the Electric Department had operating revenues of \$2,827,232 and operating expenses of \$ 2,130,249. The Electric department fully funds itself and generates operating revenue. The Electric Department is a summer peaking utility, which hit a peak of 8250.48 KW in July 2006. The Electric Department purchases its power and energy requirements from the Western Area Power Administration and Xcel Energy of Colorado. The Electric Department also owns and maintains local generation for the purpose of providing standby

power in cases of emergency.

The Electric Department employs 4 people and it is managed by the Public Works Director.

All major activities are reviewed and approved by the City Council and oversight is maintained by a Council Committee of two council members plus Public Works and City Administrator.

II. Description of Power Supplies

The Electric Department purchases its power and energy requirements from two wholesale power suppliers-the Western Area Power Administration and Public Service Company of Colorado. The Electric Department also owns and maintains local generation, which is used to supply back-up service during emergency situations.

A. Power Supply Agreement

The City is a "preference customer" of the Western Area Power Administration (Western), which entitles the City to an annual capacity and energy allocation. This entitlement is established in the Power Purchase Agreement with Western, which expires in September 2024. The City purchases its power and energy needs in excess of the Western allocation from Xcel Energy of Colorado which is a Colorado investor-owned utility regulated by the Federal Energy Regulatory Commission for its wholesale business. Peak Power was engaged in 2006 to conduct an energy audit and will assist in developing the next contract.

B. Local Generation

The City owns and maintains local generation, which consists of three diesel reciprocating engine generators. These generators range in size from 1,250 kilowatts (kW) to 2,800kW, which were installed between 1960 and 1969. All of these generators are in good operating condition and can be used during emergency situations to provide electricity for the City. These emergency situations include scheduled and unscheduled transmission line outages and scheduled substation outages.

III. Recent Activities

In December of 2003 Ordinance 821 was enacted increasing electric rates on all customers. The previous increase had been in 1996. The City absorbed Fuel Adjustment charges for several years but in March of 2003 those charges were distributed to customers for the first time.

The Main substation for the City was upgraded in 2002 adding 115KVA Delta.

The City continues to manage its well pumping activity as in the past using radio-controlled devices causing the City's well pumps to operate remotely when needed. These radio devices receive signals from a load management computer, which measures the electric demand at the City's substation using one minute intervals. If the electric demand increases to a preset limit, the computer can shut down certain wells. If the demand drops below the limit, the computer allows the wells to operate and refill the water tower. This system controls nine water well pumps and has lowered the City's overall electric demand by 600kW. In addition we continue to encourage water conservation and water management techniques by imposing June to September water restrictions. We have also provided watering measurement devices to our customers as well as information from the County Extension Office on trees and plants that are suited to our dry climate. Water restrictions also help control electrical demand and allow the water pumps to restore the water tower at a manageable rate during the night when electrical demand is reduced.

In 2006 Peak Power began an energy audit of the City. The results of that study will be shared with the public by December of 2007 through public meetings and written materials. Initial results show the overall electrical system of the City is in good shape. A draft presentation was made in May 2007 and identified a proposed twenty year plan. The completed plan will be appended to this document when approved by Council in December 2007.

The new demand rate instituted in 1996 for large commercial users continues to be used and all businesses are evaluated in January based on average kilowatt usage. In some cases smaller businesses are moved into the demand energy rate based on increased usage. To the extent that users are able to adjust their demand periods, they and the City may experience some energy savings. Comparative data pre 1996 is unavailable.

There is on going informal education to help commercial users understand the demand system and how they can best make use of the system. This training is implemented as customers call the electrical department asking questions about the demand portion of their bill. The Public Works director meets with those customers to answer any questions they have and assist them in making decisions about their demand electrical use.

IV. Industry Changes

The electric industry has seen tremendous changes in recent years. These changes are being driven by market demands for customer choice and the call for deregulation of the industry. These changes began in 1992, with Congress passing the Energy Policy Act

(EP Act). This Act established a new breed of generation facilities by allowing "Exempt Wholesale Generators" to have access to utility company transmission lines. As mentioned earlier, the Act also required Western to implement its Energy Planning and Management Program, which in turn

requires Burlington to develop this IRP .In 1996, the Federal Energy Regulatory Commission (FERC) issued an "Open Access? Rule (FERC Rule No.888). This rule requires that all FERC jurisdictional utilities file comparable, open access tariffs to allow any entity the right to use the utility companies' transmission lines at a comparable and nondiscriminatory rate.

The City acknowledges that the electric industry will most likely become deregulated in the future. Although Burlington is exempt from federal and state regulation of its electric business, this deregulation could affect the City's electric business. The City determined its cost of delivery in the 1995 rate study. As a result, the City has a distribution-wheeling rate on file as part of its electric service rate options.

V. Burlington's Issues and Concerns

For the past several year's Burlington's growth has been stagnant, in part due to a multi-year drought.

Growth is beginning slowly with a new Community Center built in 2006 as well as a Bio Diesel plant and a kidney dialysis treatment center. During 2007 we are experiencing modest growth in housing and destruction or remodeling of existing structures past their prime. Medical facilities are expanding, both long term and acute care and the private prison opened in 1997 is doubling in capacity in 2008. New City buildings are constructed with energy efficiency in mind when possible, including programmable thermostats, low wattage lighting where possible and current state of the art insulation.

This growth demands a responsive electrical system to meet the new demands. The new prison expansion will require its own 1500 KVA, Three Phase Padmount Transformer. The prison expansion will partner with a new trunk line installation and underground wiring. Three new trunk lines will improve reliability of the transmission of electrical service to Burlington.

Locating effective devices for controlling birds and animal incursion into the electrical system is an on going study. Research has been done on products that effectively limit animal incursion and some of those items have been installed. We are currently evaluating their effectiveness and when they are determined to be effectively they will be more extensively installed. It is our intent to complete that evaluation by July of 2008.

Providing affordable electrical service for citizens, especially low income and elderly is becoming an increasing concern. State and local programs partner to provide assistance for needy families. This is especially difficult as natural gas and petroleum costs rise leaving residents feeling pinched by utility costs both winter and summer.

VI. Discussion of Demand Side Management

Demand Side Management (DSM) is an industry term that is used to describe various measures, technologies, or programs which when implemented help improve a utility company's electric load profile. These DSM measures can reduce electric customer costs by improving the manner in which electricity is used. The City is billed from its wholesale suppliers on a demand and energy basis. The demand component is higher in cost when compared to the energy component. Therefore, anything that the City can do to reduce its peak electric demand will reduce its cost from its suppliers. These cost reductions can then be passed on to Burlington's customers. As mentioned in the "Recent Activities" section of this IRP, Burlington has already performed items, which could be classified as DSM measures. These include the Well Load Management Program, and implementation of demand rates. Electrical usage is monitored in City buildings with an effort to reduce usage where possible including new energy efficient furnaces and fixtures when older equipment needs to be replaced.

As a result of the recent drought, energy was diverted to maintenance activities. There has been little done in the way of public surveys or utility conservation programs. With an increase in user demand and fuel prices DSM measures will again become targeted priorities for the City as well as individual users. The City is reducing the amount of electricity used by changing from Mercury Vapor street lights to the more efficient High Pressure Sodium lights. This conversion is nearly complete and will be completed by 2008. In addition we are changing the interior lighting in our city buildings to high heat ballast fluorescent lighting. Any furnaces or air conditioning equipment that wears out is being replaced by energy efficient units. Additional cost effective measures for reducing utility usage will be evaluated by City Council during their yearly vision planning in September and October of 2008 and appropriate conservation measures will be encouraged in the future.

VII. Integration of Demand Side and Supply Side Options

As mentioned in the "Power Supply Agreements" section of this IRP, Burlington has along term supply agreement with Public Service to supply power and energy in excess of the Western allocation. This agreement does not allow for Burlington to generate its own power except during emergency situations, such as transmission outages or substation maintenance. The agreement with Public Service is in effect until September 2009. The City has contracted with Peak Power, an energy engineering and consulting firm as it prepares for the termination of the Public Service (now Xcel Energy) Agreement. Any of the DSM measures discussed earlier will be evaluated against the current supply costs to determine the cost effectiveness of implementing the DSM measures. This contract evaluation will be completed by 2009.

VIII. Environmental Considerations

Burlington supplies all of its energy needs from Public Service and Western. As mentioned earlier, the Colorado Public Utilities Commission regulates Public Service. The United States Congress governs Western through the Department of Energy. As such, these entities are required to meet all of the Federal and State regulations for environmental issues and concerns. The City believes that its suppliers will perform all of the necessary duties to remain in compliance with environmental regulations.

The State of Colorado has made significant strides to offer renewable energy resources to its citizens. Wind generation continues to be researched in Burlington including a yearlong wind study using a 66 foot AGL wind tower placed by Colorado Anemometer Loan Program during 6/7/2005 to 3/27/2006. The summary data on that study was a Mean Wind Speed of 14.1 mph with a maximum 10-min Mean of 56.3 on 11/28/2005 at 10:40 AM. The Wind Power Class is 3 (249 W/m^2). It is anticipated that a higher tower may be installed for further study to determine the cost effectiveness of such a resource but a date and resources for that study have not been determined.

IX. Load Forecast for Five Years

Attached are spreadsheets for the period 2004 to 2007 year to date. These show the actual electrical purchases for the City of Burlington. In addition, sheets showing the breakout of that electrical usage by rate category are also attached. Based on the diminishing trend of electrical purchases these data show, it is anticipated that population may grow in the range of 1-2% (60-80 persons) based on increased industry and the expansion of the private prison and local hospital, but that electrical usage will not increase more than 2-5%. This is due to conservation measures by local consumers, energy efficient heating and cooling devices, water restriction devices and other home and industry conservation measures. In addition electrical usage is directly tied to weather patterns, either very cold or very warm years. Eastern Colorado has experienced a series of years of extreme heat and cold (104° temperatures in the summer and -11° during this past winter) which effect electrical usage.

It is anticipated that the trend usage (MWH) for years will be as noted below:

	2008	2009	2010	2011	2012
Min	31909.61	32547.81	33198.76	33862.74	34539.99
Max	32848.13	33505.09	34175.2	34858.7	35555.87

X. Conclusions and Recommendations

This plan has provided a comprehensive overview of Burlington's electric business and the electric industry. The overall conclusion from this plan is that the City must be prepared to continually review and upgrade its electric business. The City must continue to study and analyze various options in order to continue providing reliable, competitive electric service to its customers. These options are presented in the two and five year plans below:

Two Year Plan

Following the presentation of the results of the Peak Power study to the City Council, cost effective changes will be scheduled depending on identified priority structures. The City Council is beginning a visioning study in September 2007 for this purpose with conclusions and recommendations from Peak Power to be formally presented in November or December of 2007. At that time priority action items will be identified and target dates decided.

Under ground electrical lines for more efficient transmission as well as aesthetics is a priority as well installation of a new feeder to replace the aging current system and provide load shifting capabilities and increased system reliability. The City began this underground installation and new feeder line installation in late summer 2007 in conjunction with the expansion of the private CCA prison located east of town. These items will require considerable budget resources but provide commensurate customer satisfaction. Citizens are increasingly dependent upon electrical resources for their minute by minute livelihood as e-commerce, telemedicine, and up to the minute global information is needed, especially, in rural areas. In addition to increasing electrical transmission equipment to meet their needs the new feeder lines and underground placement will begin in September of 2007 and be completed in June of 2008.

Outdated electrical reading and billing methods are being evaluated. The continued preservation of an aging light plant and associated costs are matters for discussion. These are part of the 2007 visioning process of the City Council and will be reevaluated in October/November of 2008 along with budget planning.

Five Year Plan

It is anticipated that the City of Burlington will experience growth in the next few years as an increasingly mobile and aging society migrates to less costly rural areas. We must be prepared to absorb that growth by improving and expanding our electrical infrastructure through better methods of transmission, generation, and billing. Underground line placement, beefed up services, interruption resistant delivery, and sustainable utility resource development will be the focus of our efforts in the next five years beginning in the fall of 2007 and being completed in fall of 2008. A major priority for this period is implementation of a conversion from 4.16 kV circuits to 13.8kV which will be executed in four phases over a period of 2-3 years (beginning in 2007 and completed in 2009). This shift will reduce dual inventory maintenance and operation and significantly increase our efficiency.